



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,947	12/31/2003	Rauf Izmailov	NECL-02-017	8608

7590 11/26/2008
Jeffery J. Brosemer, Ph.D., ESQ.
138 S. Telegraph Hill Road
Holmdel, NJ 07733

EXAMINER

NGUYEN, VAN KIM T

ART UNIT	PAPER NUMBER
----------	--------------

2456

MAIL DATE	DELIVERY MODE
-----------	---------------

11/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/749,947	Applicant(s) IZMAILOV ET AL.	
	Examiner Van Kim T. Nguyen	Art Unit 2456	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on August 28, 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to communications filed on August 28, 2008.

Claim 1-8 are non-elected and have been withdrawn, claim 30 cancelled; thus claims 9-29 are present for examination.

Response to Amendments

Election/Restriction:

2. Applicant's election without traverse of claims 9-30 in the reply filed on August 28, 2008 is acknowledged.

Claims Objections:

3. Claim 29 has been amended to overcome issues raised in the previous Office Action. Accordingly, the objection of claim 29 has been withdrawn.

Claim Rejections - 35 USC § 112

4. Claims 26 and 28 have been amended to overcome the rejection under 35 U.S.C. 112, second paragraph, raised in the previous Office Action. Accordingly, the rejection of claims 26 and 28 under 35 U.S.C. 112, second paragraph has been withdrawn.

Response to Arguments

5. Applicant's arguments with respect to claims 9-29 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 9-21 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tichy et al (US 2006/0101025), hereinafter Tichy, in view of Chung et al (US 7,277,958).

Regarding claim 9, as shown in Figure 9b, Tichy discloses a method of file transfer in a computer-based communication network (i.e., source server) by utilizing an overlay network composed of cooperating servers on computer hosts (i.e., sink server), the computer hosts connected to the communication network, wherein each of the server contains instructions which, when executed by the server, cause the server to process and forward data via the transport layer to other servers on the overlay network without modifying the native data transport protocol at transport or lower layers, the method comprising the steps of:

defining a first data forwarding path between two servers (i.e., subfile 0 path), the path comprising of concatenation of overlay links, each of the links established via transport layer between the two servers in the overlay network (Figure 9b; para 0101);

defining a second data forwarding path (i.e., subfile 1 path) between two servers, the path different from the first data forwarding path (Figure 9b; para 0101);

dividing the data file in at least two sub-files, first subfile and second sub-file (figure 9b shown the file dividing the file into subfile 0 and subfile 1); and

sending first and second sub-files over the first and second data forwarding paths, respectively (figure 9 shown the file into subfile 0 and subfile 1 is transmitting over subfile 0 path and subfile 0 path respectively).

Tichy discloses substantially all the claimed limitations, except assembling the first and second sub-files into a single file at the second server.

Chung teaches assembling the first and second sub-files into a single file at the second server (see abstract and col. 8: lines 52-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chung's teaching of re-assembling files in Tichy's system, motivated by the need to speed up the delivery of data.

Claim 10 is rejected over Tichy-Chung as applied to claim 9 above. In addition, as shown in Figure 9b, Tichy-Chung also discloses replicating each sub-file in one or more intermediate servers on the data forwarding paths and forwarding the sub-file to the next server in the path (i.e., subfile 0 replicating the data stream then send it to node 0 and node 1, meanwhile subfile 1 replicating the data stream then send it to node 2 and node 3; Tichy, Figure 9b; para 0099-0101).

Claim 11 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses for sending first and second sub-files over the first and second data forwarding paths are not started simultaneously [Tichy; para 0104].

Claim 12 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the sub-files are transmitted from a single source node (i.e., the node server that storing the file at the root of the tree in Figure 9b; Tichy) to a plurality of destination nodes

Art Unit: 2456

(i.e., node 0, node 1; Tichy), and the paths form a data forwarding tree, wherein the intermediate nodes of the tree copy the sub-files reaching them from the incoming overlay link to the plurality of outgoing overlay links (Tichy; Figures 9b, para 0100-0101).

Claim 13 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the sub-files are transmitted from a plurality of source nodes to a plurality of destination nodes, and the forwarding paths form data forwarding trees, wherein the intermediate nodes of the tree copy the data reaching them from the incoming link to the plurality of outgoing links (i.e., nested PITFALLS; Tichy, Figures 7-8, para 0080-0084 and 0095-0099).

Claim 14 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the data forwarding and processing resources are reserved, the resources including one or more metrics from the following group: bandwidth of overlay link, processing load of the server (Tichy, para 0101).

Claim 15 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the data forwarding and processing resources are determined from network monitoring, the resources including one or more metrics from the following group: bandwidth of overlay link, processing load of the server (Tichy; para 0101-0102).

Art Unit: 2456

Claim 16 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the overlay network has static topology and resources, the resources including one or more metrics from the following group: bandwidth, processing load (Tichy, para 0101-0102).

Claim 17 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the overlay network has dynamic topology and resources, the resources including one or more metrics from the following group: bandwidth, processing load (Tichy; para 0101-0102).

Claim 18 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the data forwarding paths are computed in a single server (Tichy; Figure 10b shown data forwarding paths are computed in a single server, i.e., compute node).

Claim 19 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the data forwarding paths are computed in several servers, with subsequent coordination of computed results (Tichy; para 0074-0081).

Claim 20 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the divisions of the data file into sub-files remain constant for the duration of the file transfer (Tichy; para 0076).

Claim 21 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the divisions of the data file into sub-files change during the file transfer (Tichy; para 0086-0088).

Claim 29 is rejected over Tichy-Chung as applied to claim 9 above. In addition, Tichy-Chung also discloses the transport of data partitions to a plurality of destination nodes is a combined coordination of transport push initiated by the sender and transport pull initiated by the receivers (Tichy; para 0086-0088).

8. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tichy-Chung, in view of McCanne (US 7,133,928).

Claims 22-24 are rejected over Tichy-Chung as applied to claim 11 above. However, Tichy-Chung does not explicitly call for data forwarding tree constructed using multicast method.

McCanne teaches data forwarding tree constructed using multicast depth-first-search method (col. 3: lines 51-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply McCanne's method of multicasting in Tichy's system, motivated by the need of achieving efficient transfer of information.

Claim 25 is rejected over Tichy-Chung as applied to claim 9 above. However, Tichy-Chung does not explicitly call for the established communications protocols include one or more

Art Unit: 2456

protocols selected from the following group: Internet Protocol, HTTP, FTP, SSL, TCP reliable UDP using erasure coding.

McCanne teaches the established communications protocols include one or more protocols selected from the following group: Internet Protocol, HTTP, FTP, SSL, TCP reliable UDP using erasure coding (e.g., UDP; col. 1: lines 41-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to establishing communications protocols as suggested by McCanne's in Tichy's system, motivated by the need to be conform to technology standards.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tichy-Chung, as applied to claim 12 above, in view of Chandrasekaran et al (US 6,397,352).

Tichy-Chung discloses substantially all the claimed limitations, except for encoding a monotonically increased sequence number in each packet header at data source, queuing data packet in a sink buffer in destination for each data transport session, scanning a sink buffer and selecting a data packet that matches the current receiving sequence number maintained at the destination, clocking out available data packets in the sink buffer selected by the queuing step above, increasing the receiving sequence number at the destination, delivering the available data packet to the application client; and repeating the method for all sink buffers.

Chandrasekaran teaches:

encoding a monotonically increased sequence number in each packet header at data source (col. 3: lines 61-65);

queuing data packet in a sink buffer in destination for each data transport session (col. 3: line 67 – col. 4: line 4, col. 7: lines 45, and col. 9: lines 18-33);

scanning a sink buffer and selecting a data packet that matches the current receiving sequence number maintained at the destination (e.g., source site 200 identifies message has not been successfully transmitted and propagates messages having propagation sequence number according to information received from destination site 202; col. 13: line 54 - 67);

clocking out available data packets in the sink buffer selected by the queuing step above (i.e., removing propagation information from nonvolatile memory that is associated with messages that have been assigned a propagation sequence number that is higher than the propagation sequence number that was returned by the destination site; col. 14: lines 1-5);

increasing the receiving sequence number at the destination (col. 8: lines 59-65);

delivering the available data packet to the application client (col. 14: lines 19-20); and repeating the method for all sink buffers (col. 14: lines 19-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chandrasekaran's teaching to modify Tichy-Chung's system, motivated by the need to improve the reliability of propagating messages in a distributed computing system.

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tichy-Chung, as applied to claim 12 above, in view of Byers et al ("Informed Content Delivery Across Adaptive Overlay Network", pages 47-60, SIGCOMM'02, August 19-23, 2002), hereinafter Byers.

Tichy-Chung discloses substantially all the claimed limitations, except encoding an application-specific data object identifier into a data frame; extracting the application-specific data object identifier at the destination; and reassembling the application data object according to the data object identifier.

Byers discloses encoding an application-specific data object identifier into a data frame; extracting the application-specific data object identifier at the destination; and reassembling the application data object according to the data object identifier (Sect. 2.3, Benefits of Encoded Content, page 49-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Byers's content encoding technique in Byers's system, motivated by the need of facilitating simpler and more effective data transferring.

11. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tichy-Chung, as applied to claim 9 above, in view of Chandrasekaran et al (US 6,397,352), and further in view of Krause et al (US 7,346,699).

Tichy-Chung discloses substantially all the claimed limitations, except using an explicit or implicit method to setup the forwarding table in each overlay node; forwarding the data by looking up the forwarding table installed by the setup step above at each node; scheduling data transport at the data source and at each intermediate node for each path or tree according to their QoS specification; and slowing down a particular data flow on a path or tree by using backpressure.

Chandrasekaran teaches:

using an explicit or implicit method to setup the forwarding table in each overlay node (e.g., propagation table 212; col. 8: line 63 - col. 9: line 17);

forwarding the data by looking up the forwarding table installed by the setup step above at each node (e.g., using information stored in propagation table 212 to determine whether a particular message has been sent; col. 11: lines 8-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chandrasekaran's teaching to modify Tichy-Chung's system, motivated by the need to improve the reliability of propagating messages in a distributed computing system.

Tichy-Chung-Chandrasekaran does not call for scheduling data transport at the data source and at each intermediate node for each path or tree according to their QoS specification; and slowing down a particular data flow on a path or tree by using backpressure.

Krause teaches scheduling data transport at the data source and at each intermediate node for each path or tree according to their QoS specification (i.e., SDR schedule heuristics are used to adjust the scheduling rate to create different QoS for the AIs bound to the SDRs; col. 15: lines 15-31 and col. 16: lines 32-39); and slowing down a particular data flow on a path or tree by using backpressure (i.e., modify the SDR schedule heuristic to adjust the service rate; col. 17: lines 10-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Krause's teaching in Tichy-Chung-Chandrasekaran's system, motivated by the need to improve the reliability of propagating messages in a distributed computing system.

Conclusion

12. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Van Kim T. Nguyen whose telephone number is 571-272-3073. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2456

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Van Kim T. Nguyen
Examiner
Art Unit 2456

Vkn

/Bunjod Jaroenchonwanit/

Supervisory Patent Examiner, Art Unit 2456